MARYLAND HISTORICAL TRUST DETERMINATION OF ELIGIBILITY FORM

NR Eligible: yes _____ no _X__

operty Name: SHA Bridge No. 0400500	Inventory Number: CT-784
Address: MD 2 over the Narrows	Historic district: yes X no
City: Solomons Island, MD Zip Code:	County: Calvert
USGS Quadrangle(s): Solomons Island	
Property Owner: MD SHA	Tax Account ID Number:
Tax Map Parcel Number(s): Tax Map Number	er:
Project: MD-20th Century Highway Bridges of Maryland (1948-1960) Agency	r: MD SHA
Agency Prepared By:	
Preparer's Name: Craig Tuminaro, URS Corporation	Date Prepared: 09/10/2004
Documentation is presented in: Project Review and Compliance	
Preparer's Eligibility Recommendation: Eligibility recommended	X Eligibility not recommended
Criteria: A B C D Considerations: A B	B _ C _ D _ E _ F _ G
Complete if the property is a contributing or non-contributing resource	e to a NR district/property:
Name of the District/Property:	
Inventory Number: Eligible:yes	Listed: yes
ite visit by MHT Staff yes X no Name:	Date:
Description of Property and Justification: (Please attach map and photo)	
Description	
The MD 2 Bridge (MIHP # CT-784, Bridge 0400500) over the Narrows at Solomo	
reinforced concrete slab bridge. The State Roads Commission first built a bridge i 1910s, replacing an improvised bridge that was likely built by residents of the area	in the late nineteenth century. The bridge
physically connected what had been a small, relatively isolated community that had for transport off of and on to the Island. The bridge offered residents of Solomons	
means of accessing the Island the automobile. Automobile use became increasing	gly popular in the twentieth century. Increased
automobile use required an expansion of the bridge in 1958. The widened portion portions of the super and substructures of the original 1910s bridge were largely re	
	2.
MARYLAND HISTORICAL TRUST REVIEW	a a
Eligibility recommended Eligibility not recommended	a
Criteria: A B C D Considerations: A	B C D E F G
MHT Comments:	
Will Comments.	
Ini Talund	6/2/2011
Paviawaro Office of Preservation Services	/ hoto

Reviewer, National Register Program

NR-ELIGIBILITY REVIEW FORM

CT-784

SHA Bridge No. 0400500

Page 2

Determination of Eligibility

The MD 2 Bridge (MIHP # CT-784, Bridge 0400500) over the Narrows is not eligible for listing in the National Register for Historic Places under Criterion A. While the bridge is associated with the expansion and development of southern Calvert County, and specifically Solomon's Island, and is important as a historical crossing that connected the once relatively isolated community with the main land, the bridge does not retain integrity of design, setting, materials, workmanship or feeling as much of the original portion, ca. 1910, of the bridge was replaced during a partial replacement of the super and substructure in 1986.

The MD 2 Bridge is not National Register-eligible under Criterion B, as it is not associated with an individual significant on the local, state, or national level.

The MD 2 Bridge is not National Register-eligible under Criterion C as it is not significant in the history of bridge engineering or design, nor is it an example of the work of a renowned engineer, craftsman, bridge company, or contractor. It does not exemplify significant engineering solutions developed in response to conditions characteristic of the locality or region. It also does not retain sufficient integrity to stand as a representative example of a specific bridge type which may survive in substantial numbers. It is not an example of a rare bridge type nor does it possess architectural or artistic distinction. While the MD 2 Bridge over the Narrows does reflect common construction techniques of the early twentieth century in the United States, it does not demonstrate innovative technical solutions and lacks integrity of design, setting, materials, workmanship and feeling.

National Register-eligiblity under Criterion D was not investigated as part of this study.

The Maryland State Highway Administration supports the Not Eligible recommendation made by the consultant.

MARYLA	ND HISTO	DRICAL	TRUST	REVI	EW							
Eligibility	recommen	ded		Eli	gibility not recommen	ded						
Criteria:	A	В	C	D	Considerations:	A	В	C	D	E	F	G
MHT Con		er, Offic	e of Pres	servatio	on Services			Date	95			
-	Revie	wer, Na	tional R	egister l	Program			Date				

CT-784 MD 2 Bridge over the Narrows Solomons vic. 1958; 1986

Bridge No. 0400500, built in 1958 and 1986, carries MD 2 over the Narrows at Solomons Island at the site of an earlier 1910s bridge. It connects Johnstown to the north with Solomons Island to the south. The bridge carries two lanes of traffic, one each direction. The bridge has a 20-foot clear span and measures approximately 25 feet from abutment to abutment. The western half of the bridge, dating to 1958, is a reinforced concrete slab with integral concrete caps that drop below the soffit of the slab at the abutments. The western portion of the bridge deck is paved in blacktop. The eastern half of the bridge, dating to 1986, is also a reinforced concrete slab, which largely replaced the original 1910s structure. The stem wall of the abutments directly supports this slab. The eastern portion of the bridge deck is concrete, about 2'-2" thick. A metal railing composed of squared pipes is located on each side of the bridge. A concrete wingwall extends at a 45-degree skew at the east end of the north abutment to meet a concrete seawall.

The MD 2 Bridge (MIHP ID # CT-784, Bridge 0400500) over the Narrows at Solomons Island in southern Calvert County is a reinforced concrete slab bridge. The State Roads Commission first built a bridge in this location over the shallow waterway in the 1910s, replacing an improvised bridge that was likely built by residents of the area in the late nineteenth century. The bridge physically connected what had been a small, relatively isolated community that had mainly relied on boats and other water vessels for transport off of and on to the Island. The bridge offered residents of Solomons Island and the surrounding communities another means of accessing the Island-- the automobile. Automobile use became increasingly popular in the twentieth century. Increased automobile use required an expansion of the bridge in 1958. The widened portion also utilized reinforced concrete slabs. In 1986, portions of the super and substructures of the original 1910s bridge were largely replaced in a rehabilitation effort.

Inventory No. CT-784

Maryland Historical Trust Maryland Inventory of Historic Properties Form

1. Name of I	Property	(indicate preferred r	name)		
historic	MD 2 Bridge ov	er the Narrows			
other	Bridge No. 0400	500			
2. Location					
street and number	MD 2 at the Nar	rows		<u>N/A</u>	not for publication
city, town	Solomons			N/A	vicinity
county	Calvert				
3. Owner of	Property	(give names and mailing	addresses of all owner	s)	
name	Maryland State I	Highway Administration			
street and number	707 N. Calvert S	treet		telephone 4	110-545-0300
city, town	Baltimore		state MD	zip code 2	21202
4. Location	of Legal De	escription			
courthouse, registr	y of deeds, etc.		libe	folio	
city, town		tax map	tax parcel	tax ID n	umber
Contri Deterr Deterr Recor Histori	buting Resource in mined Eligible for the mined Ineligible for ded by HABS/HAE ic Structure Report Statewide Invento	or Research Report at MH	land Register		
u. Ciassilica	tion				
Category	ownership	Current Function		Resource C	Count

7. Description	Inventory No. CT-784

Condition

excellent	deteriorated		
x good	ruins		
fair	altered		

Prepare both a one paragraph summary and a comprehensive description of the resource and its various elements as it exists today.

MD 2 over the Narrows (MIHP # CT-784, Bridge No. 0400500), built in 1958 and 1986, carries MD 2 over the Narrows at Solomons Island at the site of an earlier 1910s bridge. It connects Johnstown to the north to Solomons Island to the south. The bridge is located in a residential/commercial area of Solomons Island. A boardwalk along the Patuxent River, built after the September 1997 underwater inspection, is located to the west of the bridge. The Calvert Maritime Museum is located at the southeast corner of the bridge.

The bridge carries two lanes of traffic, one each direction. A brick sidewalk inset into a concrete sidewalk is located on the west side of the bridge. The bridge has a 20-foot clear span and measures approximately 25 feet from abutment to abutment. According to a 2001 underwater inspection report, the bridge measures approximately 50 feet from out to out of the deck. The western half of the bridge, dating to 1958, is a reinforced concrete slab with integral concrete caps that drop below the soffit of the slab at the abutments. Five 15-inch diameter timber piles spaced 5'-3" on center support the caps at the abutment. Timber bulkheads composed of 3"x8" tongue and groove lagging and secured with 10" square walers and 12"x12" struts are located adjacent to each abutment. The bulkheads extend westward for approximately 50 feet to meet a pedestrian walkway along the shore of the Patuxent River. The western portion of the bridge deck is paved in blacktop. The eastern half of the bridge, dating to 1986, is also a reinforced concrete slab, which largely replaced the original 1910s structure. The stem wall of the abutments directly supports this slab. The eastern portion of the bridge deck is concrete, about 2'-2" thick.

A metal railing composed of squared pipes is located on each side of the bridge. The railing has four horizontal members and is painted brown. Two light standards are located on the west side of the bridge.

A concrete wingwall extends at a 45-degree skew at the east end of the north abutment to meet a concrete seawall. A concrete retaining wall extends from the east end of the south abutment to meet the northwest corner of the Calvert Maritime Museum.

ance			Inventory No. CT-784
Areas of Significance	Check and j	ustify below	
agriculture archeology architecture art commerce communications community planning conservation	economics education x engineering entertainment/ recreation ethnic heritage exploration/ settlement	health/medicine industry invention landscape archite law literature maritime history military	performing arts philosophy politics/government ecture religion science social history x_ transportation other:
1958; 1986-rehabilita	ation	Architect/Builder	Maryland State Roads Commission
ates 1958; 1986			
National Register	N	laryland Register	not evaluated
	Areas of Significance agriculture archeology architecture art commerce communications community planning conservation 1958; 1986-rehability	Areas of Significance agriculturearcheologyarchitectureartcommercecommunicationscommunity planningconservation 1958; 1986-rehabilitation Areas of Significanceeconomicseducationsengineeringentertainment/ recreationethnic heritageexploration/settlement	Areas of Significance agriculture

Prepare a one-paragraph summary statement of significance addressing applicable criteria, followed by a narrative discussion of the history of the resource and its context. (For compliance projects, complete evaluation on a DOE Form – see manual.)

Statement of Significance

The MD 2 Bridge (MIHP # CT-784, Bridge 0400500) over the Narrows at Solomons Island in southern Calvert County is a reinforced concrete slab bridge. The State Roads Commission first built a bridge in this location over the shallow waterway in the 1910s, replacing an improvised bridge that was likely built by residents of the area in the late nineteenth century. The bridge physically connected what had been a small, relatively isolated community that had mainly relied on boats and other water vessels for transport off of and on to the Island. The bridge offered residents of Solomons Island and the surrounding communities another means of accessing the Island-- the automobile. Automobile use became increasingly popular in the twentieth century. Increased automobile use required an expansion of the bridge in 1958. The widened portion also utilized reinforced concrete slabs. In 1986, portions of the super and substructures of the original 1910s bridge were largely replaced in a rehabilitation effort.

History and Support

The MD 2 Bridge runs north-south over the Narrows and connects Solomons Island with the community of mainland Johnstown (originally known as Avondale). The first bridge to do so was erected in the late 19th century and was likely a makeshift wood bridge as it was described as "rickety." In the 1910s, the State Roads Commission replaced the bridge with a reinforced concrete slab bridge twenty-three feet in length, spanning the shallow Narrows. The bridge was twenty-six and a half feet wide with concrete stem walls that extended from concrete abutments with footings supported by piles. The roadbed itself measured twenty three and a half inches wide, with a one and half foot wide curb on each side that held handrails, rather than the concrete parapets that were typical for the period.²

The concrete slab bridge was a part of a larger effort by the State Roads Commission to complete upgrades of roads and other infrastructure in southern Calvert County at that period. The efforts included the construction of a concrete sea wall on the western side of Solomons Island and an unpaved road leading from the bridge to the end of the Island. This road followed the same route as the current MD 2.³ Further research is required to determine the appearance and material of the first bridge over the Narrows and the exact year the first MD 2 Bridge was constructed.

¹ Richard Dodds, "History of the Solomons Area," undated http://www.calvertmarinemuseum.com/ history.htm>.

² State of Maryland State Roads Commission, *Proposed Bulkhead and Bridge Widening*, (Baltimore: May 1957) Sheet 2 and 4.

³ Paul L. Berry "How Things Have Changed: Solomons During the Twentieth Century, Part I -- 1900-1949," <u>Bugeye Times</u> Spring 2000, 6.

Maryland Historical Trust Maryland Inventory of Historic Properties Form

Inventory No. CT-784

Name Bridge No. 0400500, MD 2 Bridge over the Narrows Continuation Sheet

Number 8 Page 1

The construction of the bridge had a major impact on Solomons Island. While the first bridge constructed over the Narrows allowed for some sort of transport—likely pedestrian and perhaps some wagons—between the mainland and Solomons Island, for the first time, larger and heavier vehicles could travel directly to the Island. Prior to that, boats were the principal form of transportation for residents and as a result, the Island was relatively isolated. Originally known as Sandy Island, the island had remained unsettled for most of the nineteenth century, until Isaac Solomon established a cannery on the Island in the years after the Civil War. Solomon also constructed workers' housing and other associated services. In 1870, the U.S. Postal Service opened an office on what was by then called Solomons Island. By 1880, the population included fifty one households and 237 residents. By 1900 that figure had reached 350 residents living among ninety one households. Industry on the Island included shipbuilding, milling and marine harvest processing, with the appropriate infrastructure to support these and other commercial and residential pursuits. By the time the first bridge was constructed in the 1890s, most industry was located on the Island. Many residents lived on the mainland just north of the Island in Avondale. Despite the improvement, residents likely continued to use boats as transportation. Boating was such an important part of the local culture and the lifestyle of residents of southern Calvert County that even after the bridges were built in the 1890s and 1910s travel by boat continued to be a widespread and popular transportation method. When the first school that served grades one to eleven was built on Solomons Island in 1925, students from around the area were transported to and from the school by school boat, a practice that continued into the mid 1930s.

The arrival of the first automobile on the Island around 1910 was a major event. School was let out for the day and workers in the shipyards left their work to take in the sight. Whether the automobile drove over the bridge or arrived by steamboat is unrecorded. Regardless, its arrival heralded even further changes for the small, somewhat secluded community. With continued improvements in roads leading to and from the Island, and on the Maryland mainland, residents had greater access to the world than the twice weekly steamboats from Baltimore previously provided. Conversely, the roadways also brought tourists to the Island, which helped to reshape the local economy. Shipyards and fisheries began to share space on the Island with boarding houses and other businesses that catered to the interests of tourists and sports fisherman. Shipbuilding on the Island also began to change from primarily the construction of work vessels to include the production of recreational boats and yachts.⁷

In 1958, the bridge was nearly doubled in size by a project that widened the roadway an additional twenty three feet towards the west, bringing the bridge to its current width of fifty feet wide from outside edge to outside edge. Following designs provided by the State Roads Commission, the bridge included a twelve foot wide shoulder to accommodate pedestrian traffic along the western side of the bridge, an element that had been missing in the 1910s bridge, making the roadway itself thirty two feet wide with curbs and guardrails occupying the remaining widths. The widening project was part of larger effort to widen MD 2 to accommodate increased traffic and wider vehicles. Additionally, the project expanded the western edge of the island approximately seventy four feet beyond the concrete seawall constructed in the 1910s. The new, western portion of the bridge was also a reinforced concrete slab. Rather than using concrete abutments, stem walls and footings, this bridge portion was supported by five equally spaced fifteen inch diameter timber piles placed in front of each newly constructed timber abutment. The new bulkhead on the western side of the Island was also constructed out of timber.

⁴ Dodds, ibid.

⁵ Berry, ibid, 1.

⁶ Berry, ibid, 6-7.

⁷ Berry, ibid, 6.

⁸ State of Maryland State Roads Commission, ibid, Sheet 2 and 4.

⁹ David Wang, P.E. and John Dubiel, Diver, *Underwater Bridge Inspection Report, Bridge No. 4005 MD Route 2 Over the Narrows, Calvert County, MD* (Baltimore: Maryland Deprtment of Transportation, State Highway Administration, December 2001) 1.

Maryland Historical Trust Maryland Inventory of Historic Properties Form

Inventory No. CT-784

Name Bridge No. 0400500, MD 2 Bridge over the Narrows Continuation Sheet

Number 8 Page 2

Reinforced concrete was a material that was introduced in the mid-nineteenth century and quickly gained popularity for its ease of use, strength, and wide application. By the turn of the twentieth century, engineers were looking to reinforced concrete for a variety of applications. In 1903-04, the American Society of Civil Engineers created a Joint Committee on Concrete and Reinforced Concrete, aimed at developing standards for concrete design and use. In 1904, the American Association of State Highway Officials also began to address standardization of designs that incorporated the material. Standardization would eventually allow for disparate engineers and bridge designers to use the same "kit of parts" in developing solutions for equally disparate situation of topography, elevation and span and was "one of the most important developments in engineering in the twentieth century."

The reinforced concrete slab bridge became a popular application, especially for short spans. Trade publications from the early decades of the 1900s extolled the flexibility and versatility of reinforced concrete slab bridges. One volume published in 1916, Concrete Construction for Rural Communities, recommended the concrete slab for spans up to 20 feet while another noted that "spans up to 20 or 30 feet, or sometimes even longer, may be made with...concrete floor slabs" Standardized designs for reinforced concrete, be it in slab, beam, frame or other forms, helped to increase the materials acceptance and versatility. By the 1930s engineers had developed methods by which concrete slabs could be used over longer distances in either single or multiple spans. This example is one of twenty- eight concrete slab bridges constructed in the 1948-1960 period by the State Roads Commission, making it the second most popular type of bridge constructed during this period after the concrete encased metal girder type.

The fact that the 1958 expansion of MD 2 Bridge over the Narrows used the same material as the original 1910s bridge attests to widespread acceptance and application of reinforced concrete. Reinforced concrete also required little maintenance. Low maintenance was seen as a significant advantage over other materials such as steel that was commonly used in trusses or girders.

After seventy years, the 1910s Bridge over the Narrows had fallen into disrepair and exhibited severe deterioration. A 1986 rehabilitation project entailed a partial replacement of the superstructure and substructure to address the deterioration. Additionally, the concrete wing-walls that extended from the east side of the bridge to the north and south, installed at the same time as the original construction of the bridge, also required repairs. The handrails on the west side of the bridge were replaced as part of the project. The existing guard and hand rail, were composed of W-beams. While further research is required to determine the exact extent of the replacement to the super- and substructures that occurred during the project, a 2001 investigation of the substructure indicated that the

¹⁰ Historic Highway Bridges, 137.

¹¹ Historic Highway Bridge, 144.

¹² Roy A. Seaton, *Concrete Construction for Rural Communities*, (New York: McGraw-Hill Book Company, Inc., 1916) 207. "Short Span Highway Bridges," *Public Works* (1916) 353.

¹³ Historic Highway Bridge, 144-5.

¹⁴ Maryland State Highway Administration, Bridges By Type and Year, 2003.

¹⁵ State of Maryland Department of Transportation State Highway Administration, *Partial Superstructure and Substructure Replacement of Bridge No. 4005, Plan and Details* (Baltimore: July 1984) Sheet 3a of 11.

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western portion of the bridge, constructed in 1958, was the "original" portion of the bridge while the eastern portion was considered replacement, indicating that the repair/replacement project may have been quite extensive. At a minimum, the project adversely impacted the historic integrity of the structure.

9. Major Bibliographical References

Inventory No. CT-784

See continuation sheet

10. Geographical Data							
Acreage of surveyed property _ Acreage of historical setting _							
Quadrangle name	Solomons Island, MD	Quadrangle scale:	1:24,000				

Verbal boundary description and justification

MD 2 Bridge carries MD 2 over the Narrows at Solomons Island. It connects Johnstown to Solomons Island. The bridge has been associated with the site since its construction.

11. Form Prepared by					
name/title	Craig Tuminaro / Mary E. Crowe and Stan Popovich				
organization	URS Corporation / Hardlines Design Company	date	October 2004		
street & number	200 Orchard Ridge Drive / 4608 Indianola Avenue	telephone	301-258-9780 / 614-784-8733		
city or town	Gaithersburg / Columbus	state	MD/ OH		

The Maryland Inventory of Historic Properties was officially created by an Act of the Maryland Legislature to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 supplement.

The survey and inventory are being prepared for information and record purposes only and do not constitute any infringement of individual property rights.

return to:

Maryland Historical Trust DHCD/DHCP 100 Community Place Crownsville, MD 21032-2023 410-514-7600

Inventory No. CT-784

Maryland Historical Trust Maryland Inventory of Historic Properties Form

Name Bridge No. 0400500, MD 2 Bridge over the Narrows Continuation Sheet

Number 9 Page 1

Berry, Paul L. "How Things Have Changed: Solomons During the Twentieth Century, Part I -- 1900-1949," <u>Bugeye Times</u> Spring 2000.

Dodds, Richard. "History of the Solomons Area," undated http://www.calvertmarinemuseum.com/history.htm.

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Seaton, Roy A. Concrete Construction for Rural Communities. New York: McGraw-Hill Book Company, Inc., 1916.

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State of Maryland Department of Transportation State Highway Administration, Partial Superstructure and Substructure Replacement of Bridge No. 4005, Plan and Details. Baltimore: July 1984.

State of Maryland State Roads Commission. Proposed Bulkhead and Bridge Widening. Baltimore, 1957.

Wang, David and John Dubiel, *Underwater Bridge Inspection Report, Bridge No. 4005 MD Route 2 Over the Narrows, Calvert County, MD.* Baltimore: Maryland Deprtment of Transportation, State Highway Administration, December 2001.

Sources Consulted:

Maryland SHA Cultural Resource Library and Bridge Engineering Department, Baltimore - Reports published by or for the State Roads Commission, bridge files

Maryland Highway Administration, District 5-Prince Frederick Shop, 100 Hallowing Point Road, Prince Frederick MD, 410-535-1748 Maryland Historical Trust Library, Crownsville - Inventory of Historic Places, National Register Nominations, Determinations of Eligibility, Cultural Resource Reports

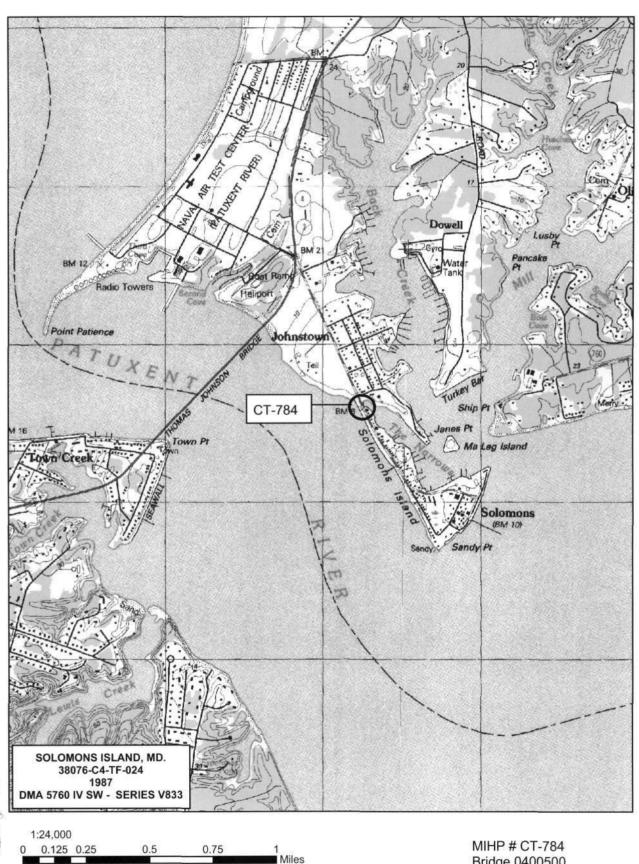
Maryland State Archives, Annapolis - photographs from the Sarikas Collection and materials published by the State Roads Commission

Enoch Pratt Library (Maryland Room), Baltimore - vertical files dealing with Maryland bridges

Library of Congress, Washington, DC - General information on bridges and additional Maryland bridge material

New Jersey State Library, Trenton - Engineering News-Record on microfilm

New York Public Library, (Science, Business, and Industry Library), New York - Additional SHA annual reports



■ Kilometers

2

1.5

0

0.25

0.5

MIHP # CT-784
Bridge 0400500
MD2 over Narrows
Solomons
Calvert County
Solomons Island M

Solomons Island, MD. Quadrangle



MIUP# 07-784 Bridge # 0400500, MDZover the Narrows Calvert County, ND Photographer: Starr Popovide, Hard res Design Company Date: 6/11/03 Location of Negative: MO SHPO looking north at bridge dear from middle of road on South and 1/6



MIHP# CT-784 Bridge # 0400500, MD 2 over the Narrows Colvert County, mo Photographer: Han Personch, Hard ness Pesign Congrang Date 6/11/03 Location of Negative: MO SHPO toling South at bridge took from middle of road on Mith Exch 2/6



MIHP # CT - 784 Bridge & 0000500, no 2 over the Narrows Calvert County, MO Photographer: Fan Agovich, Hardines Design Company Parte 6/11/03 Location of Negative: mo SHPO looking northwest at west railing 3/6



MIHP # CT-784 Bridge = 6425500, MCZrock - The Narriows Colvert Courty, mo Photographer. Han Poperdy Haidines Designioning Date : 6/11/03 Cocation of Negative: NO SHPO looking northeast at east railing 46



mIFIP # CT-784 Bridge # 6400,500, Mr 2 over the Namous Calvert County, mo Photographer: Stan Pope ord, Hordines Disign Company Oate : 6/11/03 Location of Negative: MO SHPO looking southwest at cast elevation 5/6



MIHP # CT-784 Bridge & OULCECO, MD 2 over the Neurous Colver+ County, mo Photographus : Stak Reforich, Hardines Design Congruy Date: 6/1/03 Location of Negative MD SHPO looking east at west elevation 6/6